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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,933	04/03/2001	Ming-Ren Lin	F0556	1551

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Thomas W. Adams
Renner, Otto, Boisselle & Sklar, LLP
19th Floor
1621 Euclid Ave.
Cleveland, OH 44115

EXAMINER
NGUYEN, KHIEM D

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/824,933	LIN, MING-REN	
	Examiner	Art Unit	
	Khiem D Nguyen	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

Response to Applicant's Arguments

Applicant's arguments filed 05-09-2003 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-15 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al. (U.S. Patent 6,252,294) in view of Mo et al. (U.S. Patent 6,429,481) and Tseng (U.S. Patent 5,677,222).

Hattori discloses a method of manufacturing a semiconductor device on a silicon-on-insulator wafer including a silicon active layer having at least two die pads 1a formed thereon, the at least two die pads separated by at least one scribe lane 1b wherein the scribe lane comprises a pair of parallel rows of gettering plugs or a pair of parallel gettering trenches, comprising the steps of (See col. 4, line 8 to col. 6, line 47 and FIGS. 1-5D):

forming at least one cavity 6 through the silicon active layer 4 and the buried oxide layer 3 in the at least one scribe lane (See FIG. 2) comprising forming a sidewall liner in the cavity (col. 8, lines 53-57); and

forming at least one gettering plug in each cavity 6, each gettering plug comprising a polycrystalline silicon 7 formed by CVD deposition (col. 5, lines 66-67);

Hattori discloses in FIG. 2 wherein the gettering plug 7 extends down through the silicon active layer 4, and contacts a dielectric insulation layer 3 on the wafer.

Hattori discloses in FIG. 3B-C wherein the gettering plug 7 extends down through both a silicon active layer 4 and a dielectric insulation layer 3 on the wafer.

Hattori discloses the gettering sites are formed within the silicon layer (col. 6, lines 32-34). Thus, Hattori inherently discloses subjecting the wafer to conditions to getter at least one impurity into the plurality of gettering sites. Alternatively, the applicants admitted that the gettering step of the present invention is conventional gettering, in which the SOI wafer is subjected to temperature in the range from about 500 °C to about 900 °C for periods of about 1 to about 5000 minutes, in order to cause impurities, such as metal ions, in the adjacent portions of the SOI wafer to migrate into the gettering sites within the gettering plug (specification, page 15, lines 4-13).

Hattori fails to disclose wherein each gettering plug comprising doped fill material containing a plurality of gettering sites and wherein the doped fill material is polysilicon formed by LPCVD deposition of the polysilicon and the dopant in the cavity such that the dopants ions are one or more selected from phosphorus, arsenic, antimony, bismuth, boron, aluminum, gallium, indium, helium, neon, argon, krypton, xenon and germanium as recited in present claims 1-4, 9-12, 21 and 25.

Mo discloses each gettering plug 28 comprises doped fill material containing a plurality of gettering sites wherein the doped fill material is polysilicon formed by

deposition of the polysilicon and the dopant in the cavity 14 and wherein the dopant ion is phosphorus (col. 6, lines 39-51 and FIG. 1A). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Hattori and Mo to enable the gettering plug of Hattori to be formed and furthermore to enhance defect gettering (col. 6, lines 48-51).

Neither Hattori nor Mo discloses wherein the doped fill material is polysilicon formed by LPCVD deposition of the polysilicon and the dopant in the cavity as recited in present claim 2.

Tseng discloses that the doped fill material is polysilicon 232 formed by LPCVD deposition of the polysilicon and the dopant in the cavity 231 (col. 5, line 63 to col. 6, line 2 and FIG. 15). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Hattori, Mo and Tseng to enable the doped fill material of Hattori to be formed.

Response to Amendment

Response to Applicant's Arguments

Applicant's arguments filed 05-09-2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that the prior art can not be legitimately combined to form a prima facie case of obviousness. Applicant cites the motivation of Mo in combination with Hattori and further cites Tseng for not mentioning gettering.

Examiner concedes that no one of the references teaches all the limitations of the independent claims. For a § 103 (a) rejection, one would not expect a single reference to

teach all the limitations. Hattori teaches the method of forming cavities, filling them with fill material and forming condition to getter impurities. Mo is combined for the limitation for forming a doped polysilicon plug. Although, as the applicant cites, the effect of doping for enhanced gettering may refer to bulk polysilicon, the physical effect would be the same. Tseng also teaches forming a doped fill material for a plug material as cited above using the LPCVD process. Further, Mo's and Tseng's inventions does not render Hattori's invention inoperable.

As a rule, obviousness is based upon what the "references takes collectively would suggest to those of ordinary skill in the art." *In re Rosselet*, 146 USPQ 183, 186 (CCPA 1965). Furthermore, one cannot show non-obviousness by merely attacking references individually where the rejections are based on combinations of references. *In re Keller*, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 231 USPQ 375 (Fed. Cir. 1986). Instead, there must be an absence of "some teaching, suggestion or incentive supporting the prior art combination that produces the claimed invention." *In re Bond*, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). "Just as piecemeal reconstruction of the prior art by selecting teachings in light of [the] disclosure is contrary to the requirements of 35 USC § 103, so is the failure to consider as a whole the references collectively as well as individually." *In re Passal*, 165 USPQ 720, 723 (CCPA 1970).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
July 22, 2003

Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800